

**Traffic Impact Report  
Enfield Manor  
Enfield, Connecticut**

Prepared by:

**Design Professionals, Inc.  
21 Jeffrey Drive  
South Windsor, CT 06074**

November 27, 2018



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## **1. Introduction**

The Enfield Housing Authority is proposing to redevelop a 11.86 Acre parcel of property located on Enfield Terrace, in Enfield CT. The site is fronted by Enfield Street (Route 5) to the west, residential homes/lots to the north and south, and interstate 91 to the east. Refer to the site vicinity map provided as **Appendix A**.

The existing site consists of 80 detached elderly units that are proposed to be demolished and replaced with two elderly attached housing buildings (A & B) providing a total GFA of 135,400 S.F. and 99 Elderly Housing Units. Refer to site plans entitled “Enfield Manor ~ Enfield Terrace ~ Enfield, CT ~ Site Plan”, dated September 27, 2018 and prepared by Design Professionals Inc. accompanying this report, for information regarding the proposed property development.

The Existing entrance drive for Enfield Terrace will be used to provide vehicular access to the proposed Elderly Housing Complex. Each building will include its own parking area providing a total of 116 parking stalls. All existing residential buildings on the property will be demolished during construction.

This report documents the findings of a traffic study related to the proposed land development described above. It is intended for submission to local authorities for land use approvals only and shall not be used for any other purpose.

## **2. Traffic Study Area**

The boundaries for this study were determined based on projected traffic impacts of the proposed development on the surrounding roadway network. The following intersections with intermittent roadway links were evaluated:

- **Enfield Terrace with Route 5**

See **Appendix A** for site vicinity map.

## **3. Roadway Network**

### Major Roadways:

Enfield Street (State Route 5) is a state-maintained highway that originates in New Haven and traverses north to Massachusetts. It is generally paralleled with Interstate 91. In the vicinity of the study area, Route 5 provides one lane of thru traffic in each north and south direction with a posted speed limit of 45 miles per hour. Un-Signalized intersections serve cross streets. The existing land use along Route 5 near the study area is primarily residential.

Intersections:

Site Driveway Entrance with State Route 5:

The existing Enfield Terrace driveway approach to Route 5 is proposed to remain. The driveway has one 12 FT wide lane in each direction. The site drive intersection will remain un-signalized. Enfield Street will remain free flowing while the proposed site drive will be stop sign controlled as in its existing condition.

**4. Existing Traffic**

The Enfield Manor site is surrounded by residential properties to the north, west, and south, and industrial uses to the east across I-91. The development currently operates as a Senior Adult Detached Housing Complex with 80 units (71 units occupied at time of traffic counts). Most residents have one car per household and do not work. Peak traffic associated with the surrounding area generally occurs during the morning and evening commuting hours. Design Professionals Inc. counted existing traffic during the weekday periods between 6:30 a.m. and 8:30 a.m. and between 4:00 p.m. and 6:00 p.m. Traffic counts were conducted at the site intersection with Enfield Street (Route 5) on June 8th, 2017. Traffic count data is included as **Appendix B**. The **table** below summarizes AM and PM peak hour traffic data observed that day.

**Table 1**

Land Use Component		A.M. Weekday			P.M. Weekday		
		Peak Hour (vehicles)			Peak Hour (vehicles)		
		Enter	Exit	Total	Enter	Exit	Total
Senior Adult Detached Housing (80 Units)	Site Observations (2017-06-08)	2	5	7	16	14	30

**Figures 1 and 2** summarize the existing traffic volumes for the weekday morning and afternoon peak hours observed at the sites' driveway intersection.

**5. Background Traffic**

Background traffic is defined as the traffic conditions on an existing roadway network that would exist at the time of a proposed facility’s opening even if such facility was never built. At this time, the Enfield Housing Authority anticipates Enfield Manor to be complete and fully occupied by 2021.

The State of Connecticut Department of Transportation (ConnDOT) maintains a system of automated traffic counters on state highways and other selected roadways. Our office obtained traffic count data for two locations in the vicinity of Enfield Manor.

Traffic count data obtained from the Department of Transportation’s Traffic Count Locator Program indicates that average annual traffic decreased 3.29% from 2007 and 2013. Reported traffic volumes are displayed in below:

**Table 2**

Enfield Manor - Enfield, CT			
ConnDOT Traffic Recorder Data			
State Route 5, S of South Road		State Route 5 S of Frew Terrace	
Count Station 048-2028		Count Station 048-2026	
Year	24-hour Traffic Volume (Both Directions) (Vehicles/Day)	Year	24-hour Traffic Volume (Both Directions) (Vehicles/Day)
2007	15200	2007	12500
2013	12200	2013	10300
Average annual increase 24-hour traffic volume -	-3.29%	Average annual increase 24-hour traffic volume -	-2.93%

The ConnDOT count data is also included in **Appendix C**. Despite the decreasing trend traffic volume, an annual increase of traffic at 1% was selected to be sufficient in conservatively forecasting future traffic for this project. Since traffic counting efforts were conducted in 2017, and completion of Enfield Manor is anticipated in 2021, the existing traffic counts as shown in **Figures 1 and 2**, were increased by 4% to account for modest growth. **Figures 3 and 4** summarize the background traffic volumes for the weekday a.m. and p.m. peak hours for the studies intersection.

**6. Site Generated Traffic & Distribution:**

Volumes

The Institute of Transportation Engineers (ITE) publishes trip generation data that has over the years, been voluntarily submitted by various state and local governmental agencies, consulting firms, university and colleges, developers, etc. The compilation of the data is published in their Trip Generation report. This document provides traffic engineers and planning officials a guide to help determine vehicular trip generation rates for numerous proposed building types and land uses. The ninth edition of Trip Generation was consulted in this traffic study.

Trip Generation uses statistical regression equations to compute 2-way, 24-hour traffic volumes and peak hour volumes produced by a given building type or land use. These traffic volumes are then split by ratios that represent entering and exiting traffic.

The proposed land use at Enfield Manor will include a total of 99 Senior Adult Attached Housing Units (Trip Generation land use code 252). Proposed traffic conditions were estimated based on number of proposed units. Refer to **Appendix D** for Trip Generation computations. **Table 3** below summarizes the proposed site generated traffic:

<b><u>TABLE 3</u></b>							
<b>Land Use Component</b>	<b>Dwelling Units</b>	<b>A.M. Weekday Peak Hour (vehicles)</b>			<b>P.M. Weekday Peak Hour (vehicles)</b>		
		<b>Enter</b>	<b>Exit</b>	<b>Total</b>	<b>Enter</b>	<b>Exit</b>	<b>Total</b>
Senior Adult Attached Housing	99	17	20	37	18	15	33

Distribution:

The site generated traffic distribution patterns were developed by following existing traffic patterns. Due to limited activity leaving & entering the site, the percentage of exiting traffic turning left from the site driveway was set equal to the observed percentage of total through traffic on Enfield Street (CT Route 5) travelling southbound & northbound for both AM and PM traffic counts. The final distributions for AM and PM conditions were determined as follows:

**A.M. Distribution:**

- Left Turn Exit / Left Turn Entrance:  
 Total Through Trips (NB & SB) = 941 (Total through trips on Route 5)  
 Total Enfield Street travelling **Southbound** = 555 SB Trips  
 Calculated Distribution = 555 SB Trips / 941 Total trips = **59%**
  
- Right Turn Exit / Right Turn Entrance:  
 Total Through Trips (NB & SB) = 941 (Total through trips on Route 5)  
 Total Enfield Street travelling **Northbound** = 386 NB Trips  
 Calculated Distribution = 386 SB Trips / 941 Total trips = **41%**

### **P.M. Distribution:**

- Left Turn Exit / Left Turn Entrance:  
Total Through Trips (NB & SB) = 1167 (Total through trips on Route 5)  
Total Enfield Street travelling **Southbound** = 568 SB Trips  
Calculated Distribution = 568 SB Trips / 1167 Total trips = **49%**
- Right Turn Exit / Right Turn Entrance:  
Total Through Trips (NB & SB) = 1167 (Total through trips on Route 5)  
Total Enfield Street travelling **Northbound** = 599 NB Trips  
Calculated Distribution = 599 SB Trips / 1167 Total trips = **51%**

**Figures 5 and 6** presents the directional distribution and expected site generated traffic for both the A.M. and P.M. peak hours.

### **7. Combined Traffic**

The combined traffic volumes consist of adding the background and site generated traffic. **Figures 7 and 8** represent the weekday a.m. and p.m. peak hour combined traffic volumes.

## **8. Traffic Operations Analysis**

In order to determine traffic impacts of the proposed development at Enfield Manor, capacity analyses were conducted for the background and combined traffic conditions. The analyses use techniques presented in the “2010 Highway Capacity Manual”, (HCM) published by the Transportation Research Board. The analyses were conducted to determine the operational effectiveness of each studied intersection.

The total capacity of an intersection is computed on a movement by movement basis. This represents the maximum number of vehicles that can utilize an intersection during an hour. A comparison with the total number vehicles attempting to use the intersection yields the volume to capacity ratio, which is equivalent to the ratio of capacity utilized with capacity available during the peak hour. An intersection nears its capacity as the volume to capacity ratio approaches one.

Level of Service (LOS) was determined for the site driveway. LOS is rated on a scale from A to F, with LOS A representing a delay less than 10 seconds per vehicle, and LOS F, a delay more than 50 seconds. The LOS criteria with respect to delay for an unsignalized intersection is shown in **Table 4**.

<b>TABLE 4</b>	
<b>LEVEL OF SERVICE CRITERIA</b>	
Level of Service	Un-signalized Average Delay (Sec./vehicle)
A	0 - 10
B	>10 - 15
C	>15 - 25
D	>25 - 35
E	>35 - 50
F	>50

Analyses were conducted using SYNCHRO (Version 10) computer software, which uses the same analysis techniques outlined in the 2010 HCM. The software was used to analyze the intersection to compare today's traffic conditions with the proposed traffic conditions (with consideration of increased background traffic for an expected opening date in 2021) to evaluate the impacts. The results from Synchro are included as **Appendix E**. The Synchro results showed that in considering ITE reported trip generation values for existing background conditions, the delay time will actually decrease or remain the same for the overall intersection and individual approaches. LOS during the morning and afternoon peak periods remained the same. A direct comparison of the LOS and delay for both background and combined conditions is included below in **Table 5**.

<b>Table 5</b>							
<b>Level of Service Summary</b>							
<b>Intersection</b>	<b>Peak Hour</b>	<b>Approach</b>	<b>2021 Background Traffic</b>		<b>Combined 2021 Traffic</b>		<b>Change in Delay (seconds)</b>
			<b>LOS</b>	<b>Delay (seconds)</b>	<b>LOS</b>	<b>Delay (seconds)</b>	
Route 5 & Enfield Terrace (Site Drive)	A.M.	Westbound	C	16.6	C	22.2	+5.6
		North Bound	A	0.0	A	0.0	0.0
		South Bound	A	0.1	A	0.4	+0.3
	P.M.	Westbound	C	16.5	C	20.9	+4.4
		North Bound	A	0.0	A	0.0	0.0
		South Bound	A	0.3	A	0.3	0.0

## **9. Sight Line Analysis**

### Driveways:

The sight lines at the proposed Enfield Manor Site driveway were reviewed. Looking right, sightline for motorists turning left onto Enfield Street is clear to Green Valley Drive, or approximately 510 feet. Looking left, sightline for right turning motorists is 710 feet.

Connecticut DOT provides guidelines for acceptable sightline distances for vehicles turning from a stopped condition onto a 2-lane roadway. The analysis indicates that sight line distances will be adequate for passenger vehicles exiting Enfield Manor. **Table 5** below provides a summary of the sight line analyses.

<b>TABLE 5</b>		
Intersection Sightline Analysis – Enfield Manor Driveway (Passenger Vehicle - 45 mile per hour design speed)		
Maneuver	Required Sight Line * (Feet)	Provided Sight Line (Feet)
Turning Left or Right	500	500+

\* Required Site Line Distance reference from CT DOT 2003 Highway Design Manual. Figure 11-2C.

## **10. Traffic Accident Data:**

The Town of Enfield Police Department recommended utilizing the UCONN crash repository (<https://www.ctcrash.uconn.edu/>) for obtaining the latest accident history in the vicinity of Enfield Manor. The repository contained traffic data over the past three years (January 2015 – November 2018). The crash report indicated that 6 accidents occurred in the vicinity of the site driveway to route 5 during this time frame (Location map included in **Appendix F**). None of these accidents resulted in a fatality and only 2 of those accidents occurred at the site driveway intersection. The generated traffic history report is included in **Appendix F**. With no change to the LOS for the proposed site conditions, no corrections are proposed with this traffic report as the proposed site conditions will not worsen existing conditions.

## **11. Conclusion:**

The findings of this traffic impact study reveal no indication that the operational effectiveness and safety of the surrounding roadway network will be significantly compromised as a result of the proposed development at Enfield Manor.

**APPENDIX A**  
**Site Vicinity Map**



NOT TO SCALE

**Design Professionals**  
civil & traffic engineers • surveyors  
landscape architects • planners • GIS • GPS  
21 Jeffrey Drive P.O. Box 1167, South Windsor, Connecticut 06074  
Tel. 860-291-8755  
Fax 860-291-8757

**ENFIELD MANOR**  
ENFIELD TERRACE  
ENFIELD CONNECTICUT

NOTE:  
2004 CT AERIAL OBTAINED FROM USGS AERIAL MAP  
DATABASE.

SITE VICINITY MAP

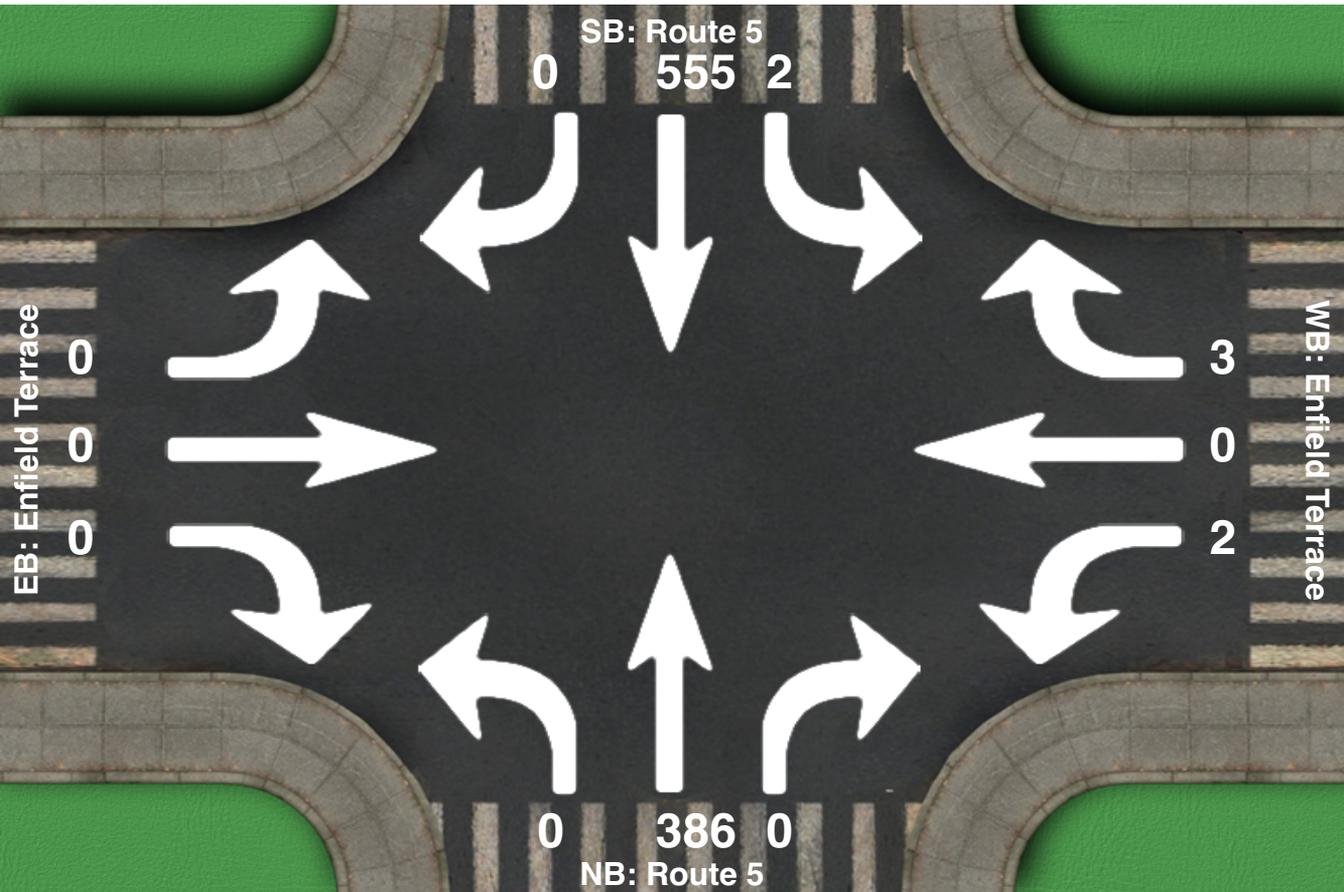
**APPENDIX B**  
**Traffic Count Data**





# Intersection Peak Hour

**Location:** Route 5 at Enfield Terrace, Enfield, CT  
**GPS Coordinates:**  
**Date:** 2017-06-08  
**Day of week:** Thursday  
**Weather:** Sunny  
**Analyst:** Moser



# Intersection Peak Hour

07:00 - 08:00

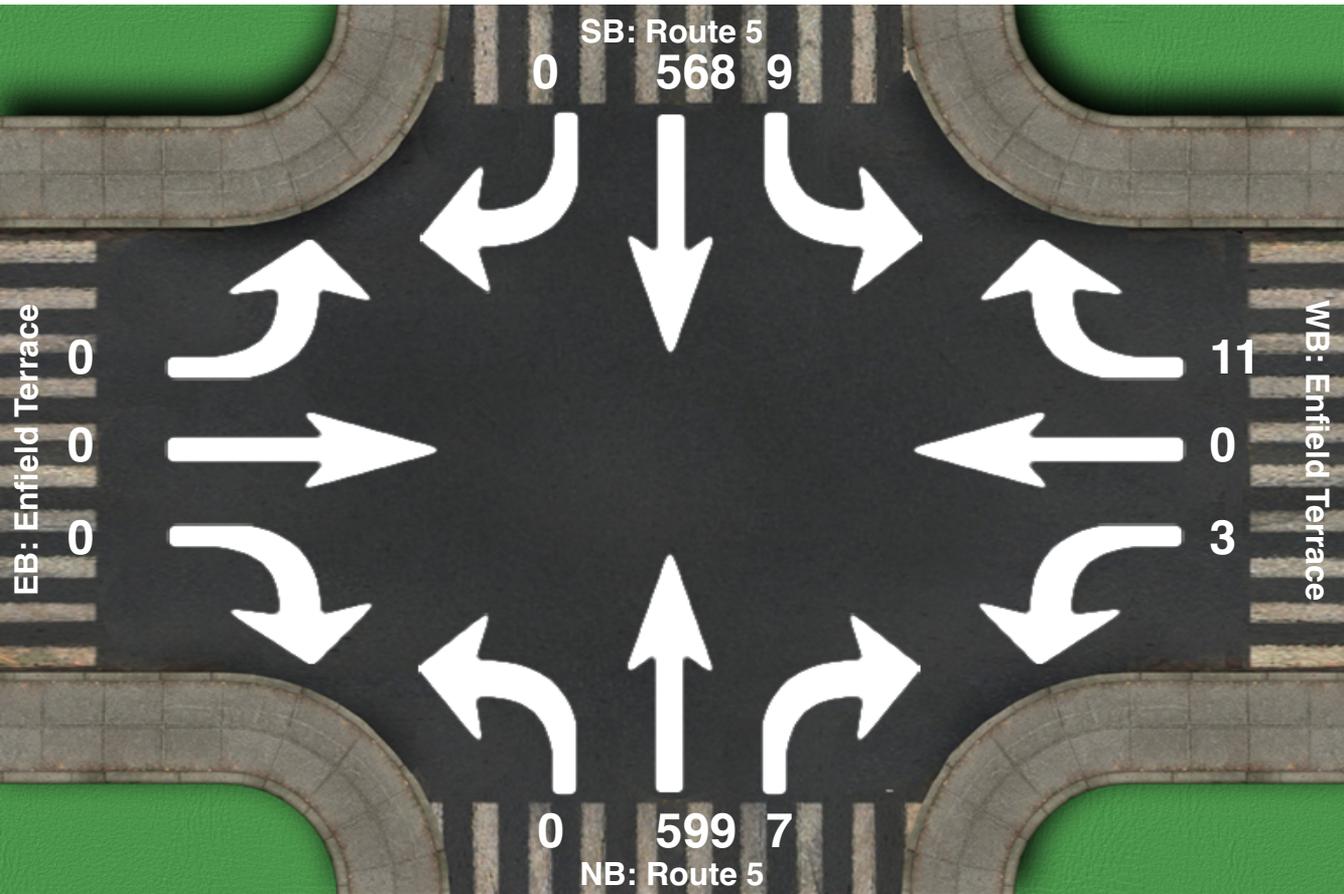
	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	2	555	0	2	0	3	0	386	0	0	0	0	948
Factor	0.25	0.74	0.00	0.50	0.00	0.75	0.00	0.81	0.00	0.00	0.00	0.00	0.79
Approach Factor	0.74			0.62			0.81			0.00			





# Intersection Peak Hour

**Location:** Route 5 at Enfield Terrace, Enfield, CT  
**GPS Coordinates:**  
**Date:** 2017-06-08  
**Day of week:** Thursday  
**Weather:** Partly Sunny  
**Analyst:** LaBonte

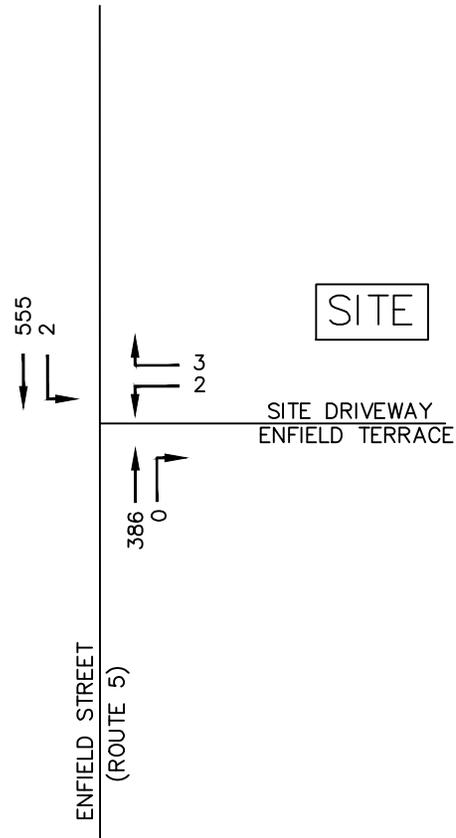


## Intersection Peak Hour

16:45 - 17:45

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	9	568	0	3	0	11	0	599	7	0	0	0	1197
Factor	0.75	0.95	0.00	0.38	0.00	0.92	0.00	0.89	0.88	0.00	0.00	0.00	0.96
Approach Factor	0.94			0.88			0.89			0.00			

EXISTING CONDITIONS (A.M.)  
 (TRAFFIC COUNTED 6/8/17)



**NOTE:**

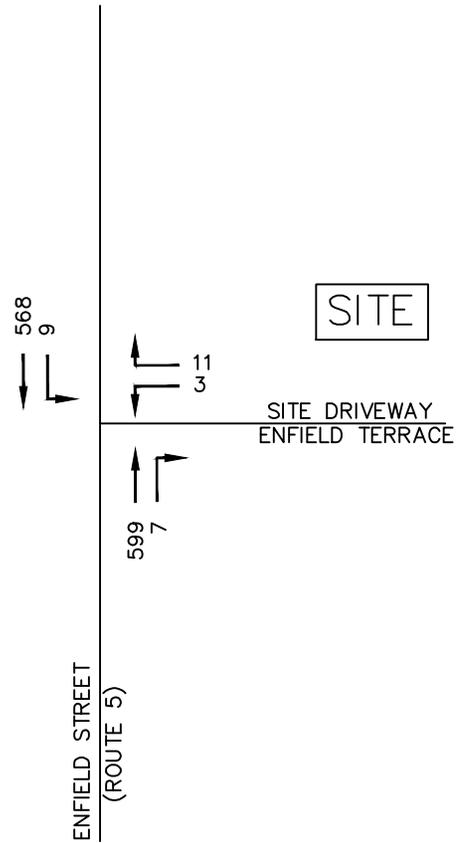
TRAFFIC COUNTS WERE CONDUCTED ON THURSDAY JUNE 8TH, 2017 BY DESIGN PROFESSIONALS, INC.  
 FROM 6:30 TO 8:30 A.M.  
 PEAK HOUR: 7:00 TO 8:00 A.M.

**Design Professionals**  
 civil & traffic engineers • surveyors  
 landscape architects • planners • gis • gps  
 Tel. 860-291-8755  
 Fax 860-291-8757  
 21 Jeffrey Drive P.O. Box 1167, South Windsor, Connecticut 06074

**ENFIELD MANOR**  
**ENFIELD TERRACE**  
 ENFIELD CONNECTICUT

FIGURE 1

EXISTING CONDITIONS (P.M.)  
 (TRAFFIC COUNTED 6/8/17)



**NOTE:**

TRAFFIC COUNTS WERE CONDUCTED ON THURSDAY JUNE 8TH, 2017 BY DESIGN PROFESSIONALS, INC.  
 FROM 4:00 TO 6:00 P.M.  
 PEAK HOUR: 4:45 TO 5:45 P.M.

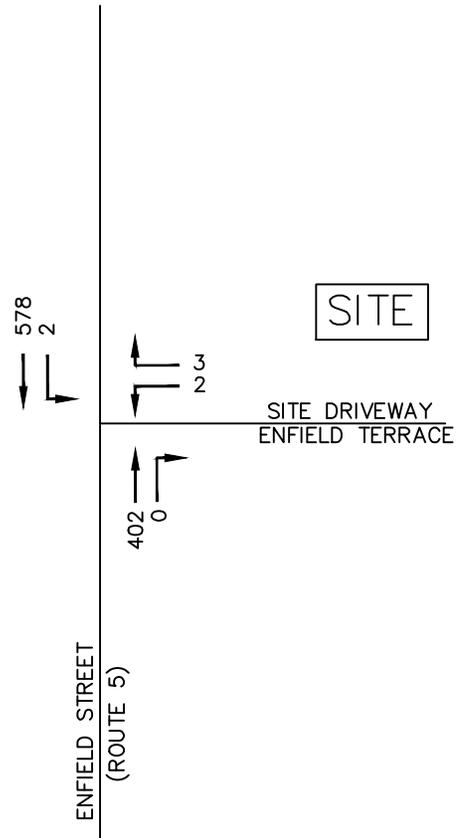
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**ENFIELD MANOR**  
**ENFIELD TERRACE**  
 ENFIELD CONNECTICUT

FIGURE 2

**APPENDIX C**  
**ConnDOT ADT Count Data**

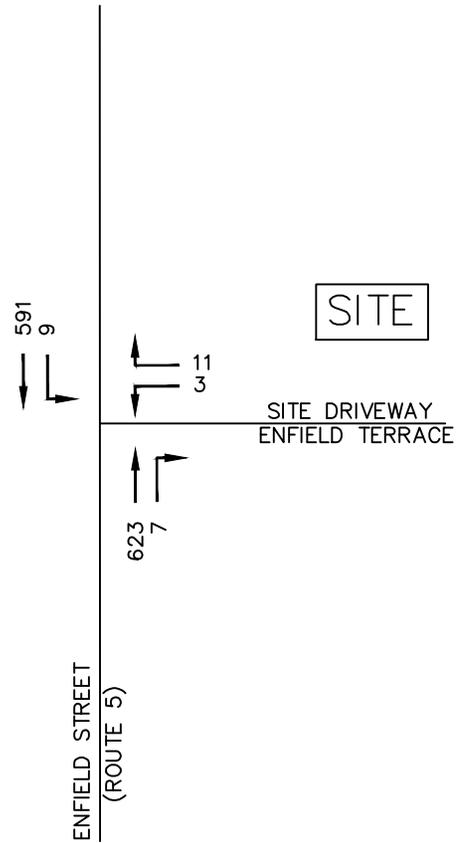
BACKGROUND CONDITIONS 2021  
A.M. PEAK HOUR



NOTE:

BACKGROUND TRAFFIC VOLUMES DETERMINED BY APPLYING A 1% PER ANNUM GROWTH FACTOR FROM 2017 TO 2021. (4% INCREASE)

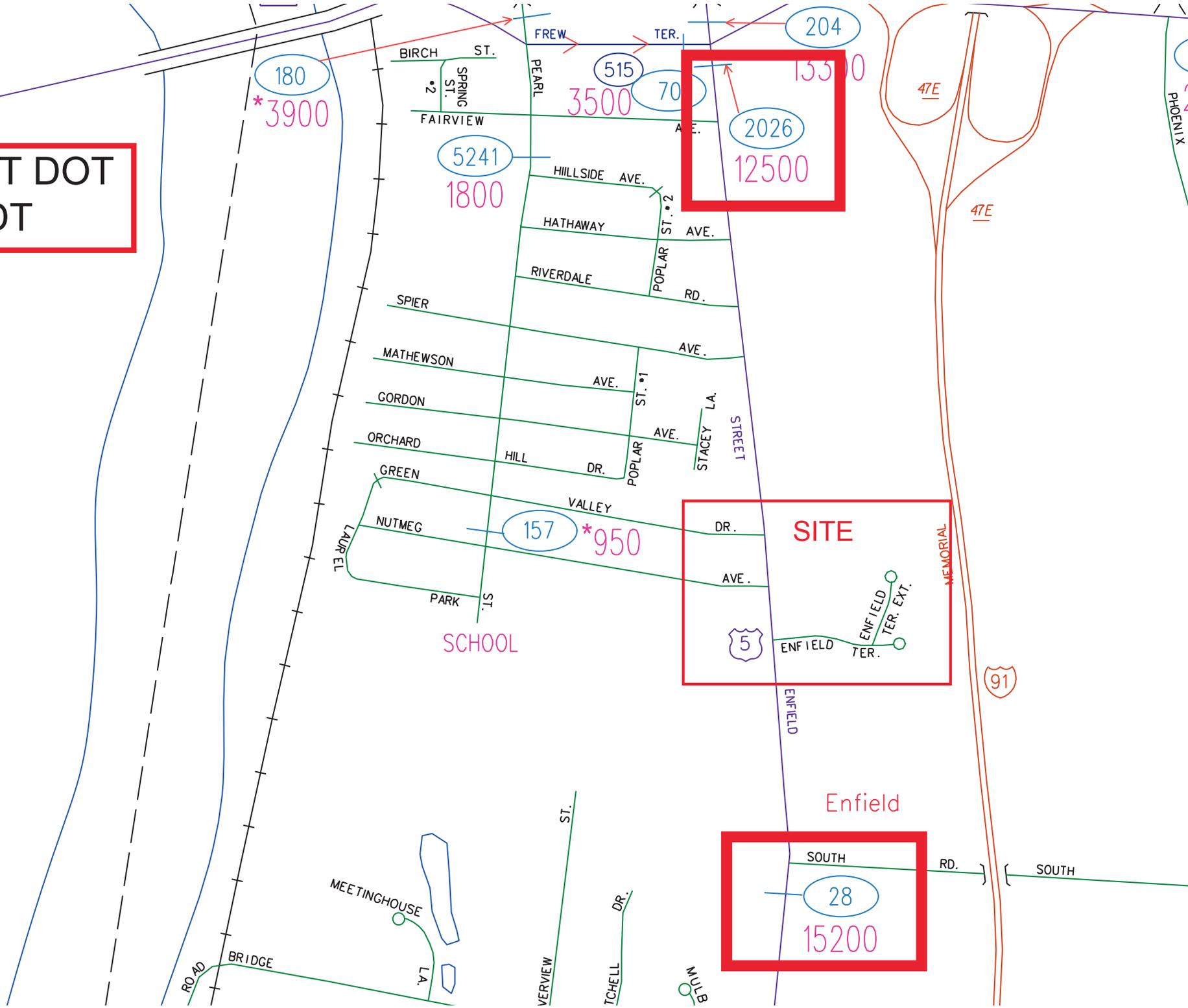
BACKGROUND CONDITIONS 2021  
P.M. PEAK HOUR



NOTE:

BACKGROUND TRAFFIC VOLUMES DETERMINED BY APPLYING A 1% PER ANNUM GROWTH FACTOR FROM 2017 TO 2021. (4% INCREASE)

2007 CT DOT  
ADT



STATE OF CONNECTICUT  
DEPARTMENT OF TRANSPORTATION  
BUREAU OF POLICY AND PLANNING  
PLANNING INVENTORY AND DATA

TRAFFIC RECORDER DATA

TOWN OF ENFIELD

ROUTE 5

DIRECTION B

SOUTH OF SR 515(FREW TER)

DAY	SUN	MON	TUE	WED	THU	FRI	SAT
DATE	0	04/30/2007	05/01/2007	0	0	0	0
TYPE							
HOUR							

2007 ADT = 11700

ACF = NA

\*\*\*\*\*

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02A	0	0	25	0	0	0	0
03A	0	0	25	0	0	0	0
04A	0	0	41	0	0	0	0
05A	0	0	146	0	0	0	0
06A	0	0	476	0	0	0	0
07A	0	0	762	0	0	0	0
08A	0	825	828	0	0	0	0
09A	0	606	685	0	0	0	0
10A	0	606	0	0	0	0	0
11A	0	627	0	0	0	0	0
12P	0	763	0	0	0	0	0
01P	0	761	0	0	0	0	0
02P	0	938	0	0	0	0	0
03P	0	1024	0	0	0	0	0
04P	0	1059	0	0	0	0	0
05P	0	1067	0	0	0	0	0
06P	0	869	0	0	0	0	0
07P	0	632	0	0	0	0	0
08P	0	487	0	0	0	0	0
09P	0	325	0	0	0	0	0
10P	0	209	0	0	0	0	0
11P	0	111	0	0	0	0	0
TOT	0	10909	3085	0	0	0	0

STATE OF CONNECTICUT  
DEPARTMENT OF TRANSPORTATION  
BUREAU OF POLICY AND PLANNING  
PLANNING INVENTORY AND DATA

TRAFFIC RECORDER DATA

TOWN OF ENFIELD

ROUTE 5

DIRECTION B

SOUTH OF SOUTH ROAD

DAY	SUN	MON	TUE	WED	THU	FRI	SAT
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TYPE							
HOUR							

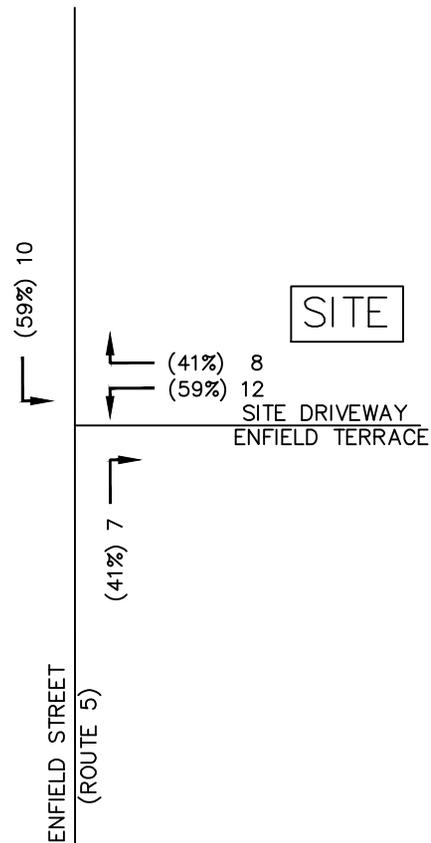
2007 ADT = 14500

ACF = NA

\*\*\*\*\*

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03A	0	0	27	0	0	0	0
04A	0	0	62	0	0	0	0
05A	0	0	196	0	0	0	0
06A	0	0	647	0	0	0	0
07A	0	0	1104	0	0	0	0
08A	0	1048	1024	0	0	0	0
09A	0	696	0	0	0	0	0
10A	0	721	0	0	0	0	0
11A	0	784	0	0	0	0	0
12P	0	938	0	0	0	0	0
01P	0	887	0	0	0	0	0
02P	0	1189	0	0	0	0	0
03P	0	1272	0	0	0	0	0
04P	0	1411	0	0	0	0	0
05P	0	1293	0	0	0	0	0
06P	0	997	0	0	0	0	0
07P	0	765	0	0	0	0	0
08P	0	575	0	0	0	0	0
09P	0	385	0	0	0	0	0
10P	0	222	0	0	0	0	0
11P	0	137	0	0	0	0	0
TOT	0	13320	3212	0	0	0	0

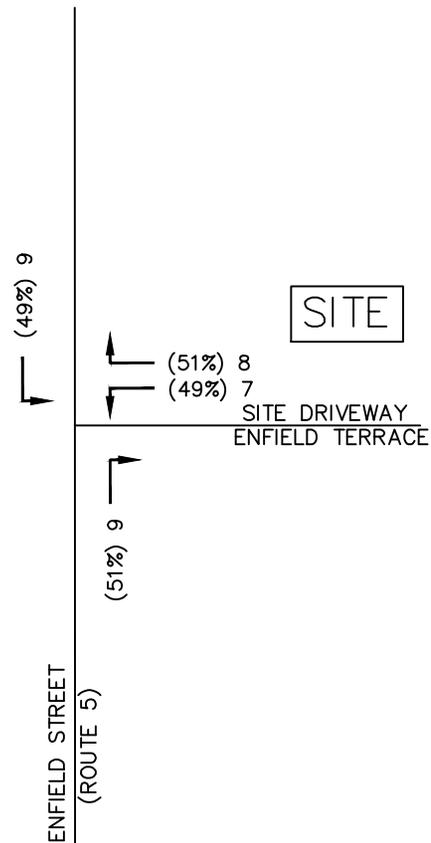
DIRECTIONAL DISTRIBUTION OF SITE GENERATED TRAFFIC  
A.M. EXITING & ENTERING



NOTE:

SITE GENERATED TRAFFIC VOLUMES DETERMINED USING OF ITE TRIP GENERATION DATA,  
LAND USE CODE 252 (SENIOR ADULT ATTACHED HOUSING).  
DISTRIBUTION OF SITE GENERATED TRAFFIC SYNTHESIZED/PROPORTIONED WITH BACKGROUND TRAFFIC

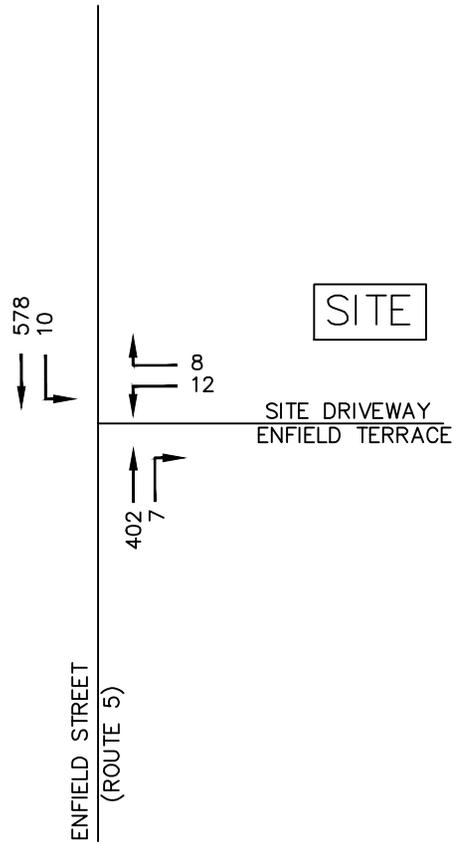
# DIRECTIONAL DISTRIBUTION OF SITE GENERATED TRAFFIC P.M. EXITING & ENTERING



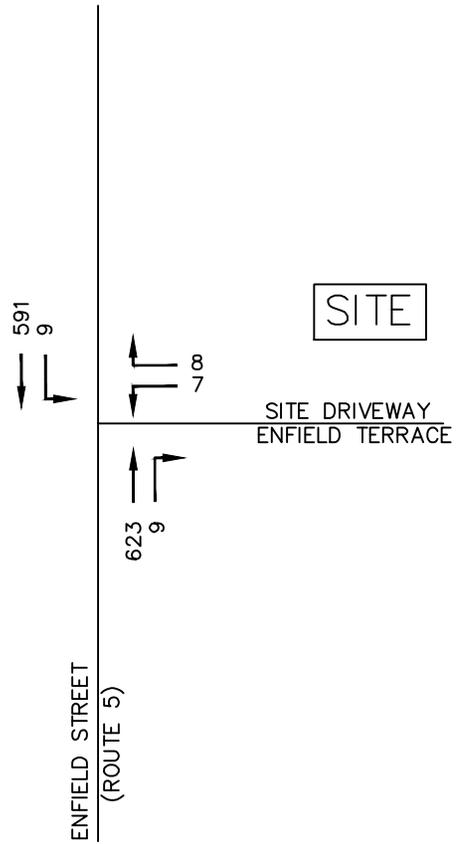
**NOTE:**

SITE GENERATED TRAFFIC VOLUMES DETERMINED USING OF ITE TRIP GENERATION DATA,  
 LAND USE CODE 252 (SENIOR ADULT ATTACHED HOUSING).  
 DISTRIBUTION OF SITE GENERATED TRAFFIC SYNTHESIZED/PROPORTIONED WITH BACKGROUND TRAFFIC

COMBINED TRAFFIC 2021  
A.M. PEAK HOUR

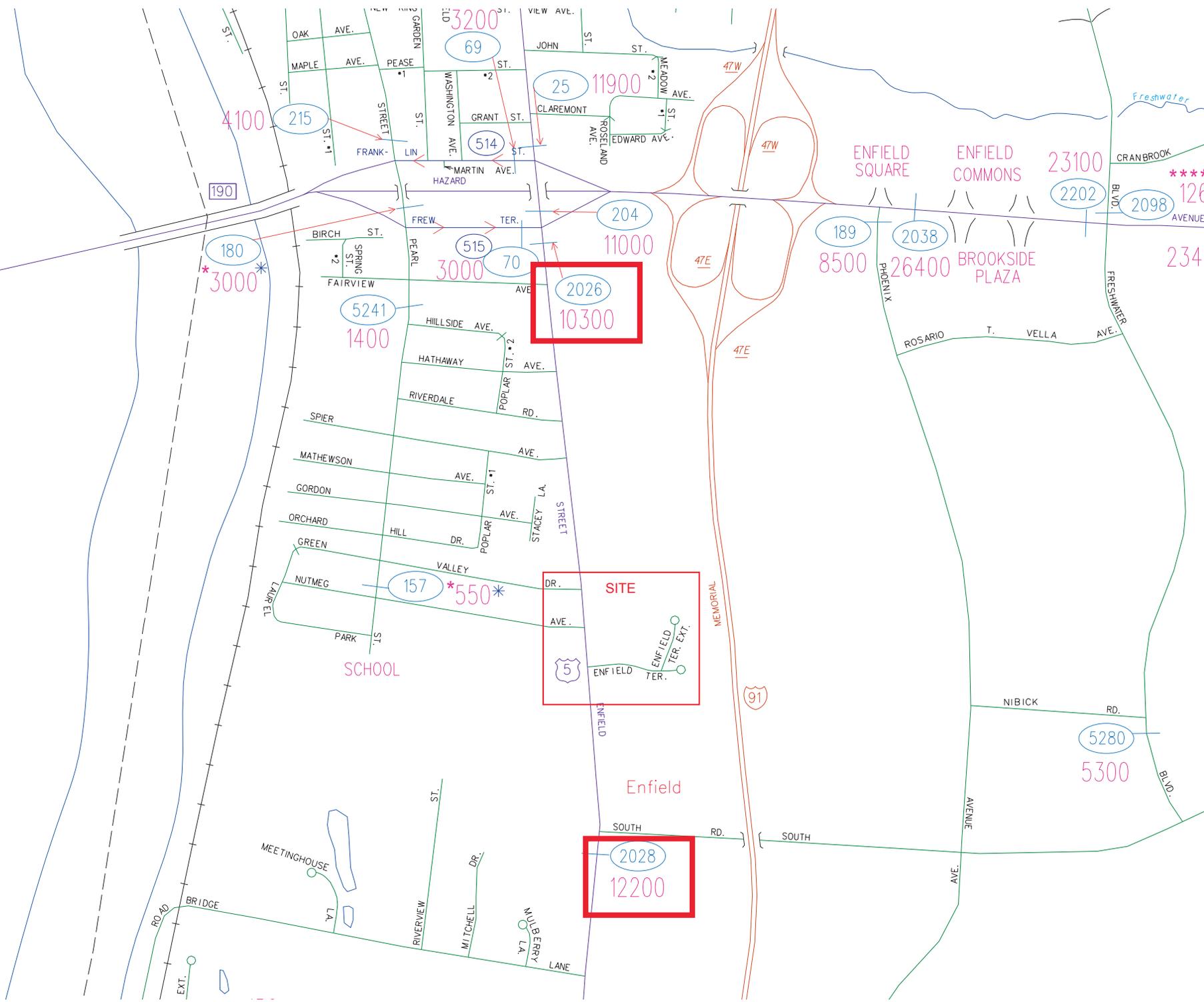


COMBINED TRAFFIC 2021  
P.M. PEAK HOUR



2013 CT DOT  
ADT

391  
180  
400



STATE OF CONNECTICUT  
DEPARTMENT OF TRANSPORTATION  
BUREAU OF POLICY AND PLANNING  
PLANNING INVENTORY AND DATA

TRAFFIC RECORDER DATA

TOWN OF ENFIELD

ROUTE 5

DIRECTION N

SOUTH OF SR 515(FREW TER)

DAY	SUN	MON	TUE	WED	THU	FRI	SAT
DATE	0	0	0	08/14/2013	08/15/2013	08/16/2013	0
TYPE							
HOUR							

2013 ADT = 5300

ACF = NA

\*\*\*\*\*

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02A	0	0	0	0	11	25	0
03A	0	0	0	0	19	7	0
04A	0	0	0	0	22	19	0
05A	0	0	0	0	61	51	0
06A	0	0	0	0	148	102	0
07A	0	0	0	301	309	0	0
08A	0	0	0	324	307	0	0
09A	0	0	0	307	314	0	0
10A	0	0	0	338	331	0	0
11A	0	0	0	404	355	0	0
12P	0	0	0	404	396	0	0
01P	0	0	0	372	385	0	0
02P	0	0	0	381	403	0	0
03P	0	0	0	415	424	0	0
04P	0	0	0	454	490	0	0
05P	0	0	0	485	535	0	0
06P	0	0	0	369	367	0	0
07P	0	0	0	305	303	0	0
08P	0	0	0	243	237	0	0
09P	0	0	0	132	156	0	0
10P	0	0	0	114	89	0	0
11P	0	0	0	72	55	0	0
TOT	0	0	0	5420	5759	252	0

STATE OF CONNECTICUT  
DEPARTMENT OF TRANSPORTATION  
BUREAU OF POLICY AND PLANNING  
PLANNING INVENTORY AND DATA

TRAFFIC RECORDER DATA

TOWN OF ENFIELD

ROUTE 5

DIRECTION S

SOUTH OF SR 515(FREW TER)

DAY	SUN	MON	TUE	WED	THU	FRI	SAT
DATE	0	0	0	08/14/2013	08/15/2013	08/16/2013	0
TYPE							
HOUR							

2013 ADT = 5000

ACF = NA

\*\*\*\*\*

12A	0	0	0	0	39	50	0
01A	0	0	0	0	23	20	0
02A	0	0	0	0	12	15	0
03A	0	0	0	0	4	11	0
04A	0	0	0	0	20	21	0
05A	0	0	0	0	47	56	0
06A	0	0	0	0	161	95	0
07A	0	0	0	267	288	0	0
08A	0	0	0	283	293	0	0
09A	0	0	0	262	278	0	0
10A	0	0	0	300	294	0	0
11A	0	0	0	343	320	0	0
12P	0	0	0	374	369	0	0
01P	0	0	0	297	338	0	0
02P	0	0	0	380	372	0	0
03P	0	0	0	401	365	0	0
04P	0	0	0	476	440	0	0
05P	0	0	0	499	529	0	0
06P	0	0	0	359	393	0	0
07P	0	0	0	287	299	0	0
08P	0	0	0	254	289	0	0
09P	0	0	0	183	173	0	0
10P	0	0	0	109	125	0	0
11P	0	0	0	70	44	0	0
TOT	0	0	0	5144	5515	268	0

STATE OF CONNECTICUT  
DEPARTMENT OF TRANSPORTATION  
BUREAU OF POLICY AND PLANNING  
PLANNING INVENTORY AND DATA

TRAFFIC RECORDER DATA

TOWN OF ENFIELD	ROUTE 5						DIRECTION N
SOUTH OF SOUTH ROAD	SUN	MON	TUE	WED	THU	FRI	SAT
DAY	0	08/12/2013	08/13/2013	08/14/2013	0	0	0
DATE							
TYPE							
HOUR							
	<b>2013 ADT = 6100</b>		<b>ACF = NA</b>				
	*****						
12A	0	0	36	44	0	0	0
01A	0	0	21	18	0	0	0
02A	0	0	11	13	0	0	0
03A	0	0	19	22	0	0	0
04A	0	0	29	25	0	0	0
05A	0	0	56	69	0	0	0
06A	0	201	190	0	0	0	0
07A	0	348	342	0	0	0	0
08A	0	380	388	0	0	0	0
09A	0	361	317	0	0	0	0
10A	0	390	385	0	0	0	0
11A	0	387	351	0	0	0	0
12P	0	422	420	0	0	0	0
01P	0	411	386	0	0	0	0
02P	0	458	459	0	0	0	0
03P	0	486	510	0	0	0	0
04P	0	632	632	0	0	0	0
05P	0	656	677	0	0	0	0
06P	0	440	416	0	0	0	0
07P	0	342	350	0	0	0	0
08P	0	258	236	0	0	0	0
09P	0	160	179	0	0	0	0
10P	0	106	120	0	0	0	0
11P	0	73	58	0	0	0	0
TOT	0	6511	6588	191	0	0	0

STATE OF CONNECTICUT  
DEPARTMENT OF TRANSPORTATION  
BUREAU OF POLICY AND PLANNING  
PLANNING INVENTORY AND DATA

TRAFFIC RECORDER DATA

TOWN OF ENFIELD	ROUTE 5						DIRECTION S
SOUTH OF SOUTH ROAD	SUN	MON	TUE	WED	THU	FRI	SAT
DAY	0	08/12/2013	08/13/2013	08/14/2013	0	0	0
DATE							
TYPE							
HOUR							
	<b>2013 ADT = 6100</b>		ACF = NA				
	*****						
12A	0	0	37	46	0	0	0
01A	0	0	16	24	0	0	0
02A	0	0	11	9	0	0	0
03A	0	0	17	14	0	0	0
04A	0	0	38	45	0	0	0
05A	0	0	105	111	0	0	0
06A	0	268	247	0	0	0	0
07A	0	421	436	0	0	0	0
08A	0	375	341	0	0	0	0
09A	0	383	328	0	0	0	0
10A	0	372	311	0	0	0	0
11A	0	387	379	0	0	0	0
12P	0	448	389	0	0	0	0
01P	0	401	389	0	0	0	0
02P	0	440	396	0	0	0	0
03P	0	472	496	0	0	0	0
04P	0	540	543	0	0	0	0
05P	0	526	599	0	0	0	0
06P	0	423	427	0	0	0	0
07P	0	349	341	0	0	0	0
08P	0	286	301	0	0	0	0
09P	0	207	177	0	0	0	0
10P	0	124	136	0	0	0	0
11P	0	82	75	0	0	0	0
TOT	0	6504	6535	249	0	0	0

**APPENDIX D**  
**Trip Generation Computations**

# Senior Adult Housing - Attached (252)

3463  
ENFIELD

**Average Vehicle Trip Ends vs: Dwelling Units**  
**On a: Weekday,**  
**P.M. Peak Hour of Generator**

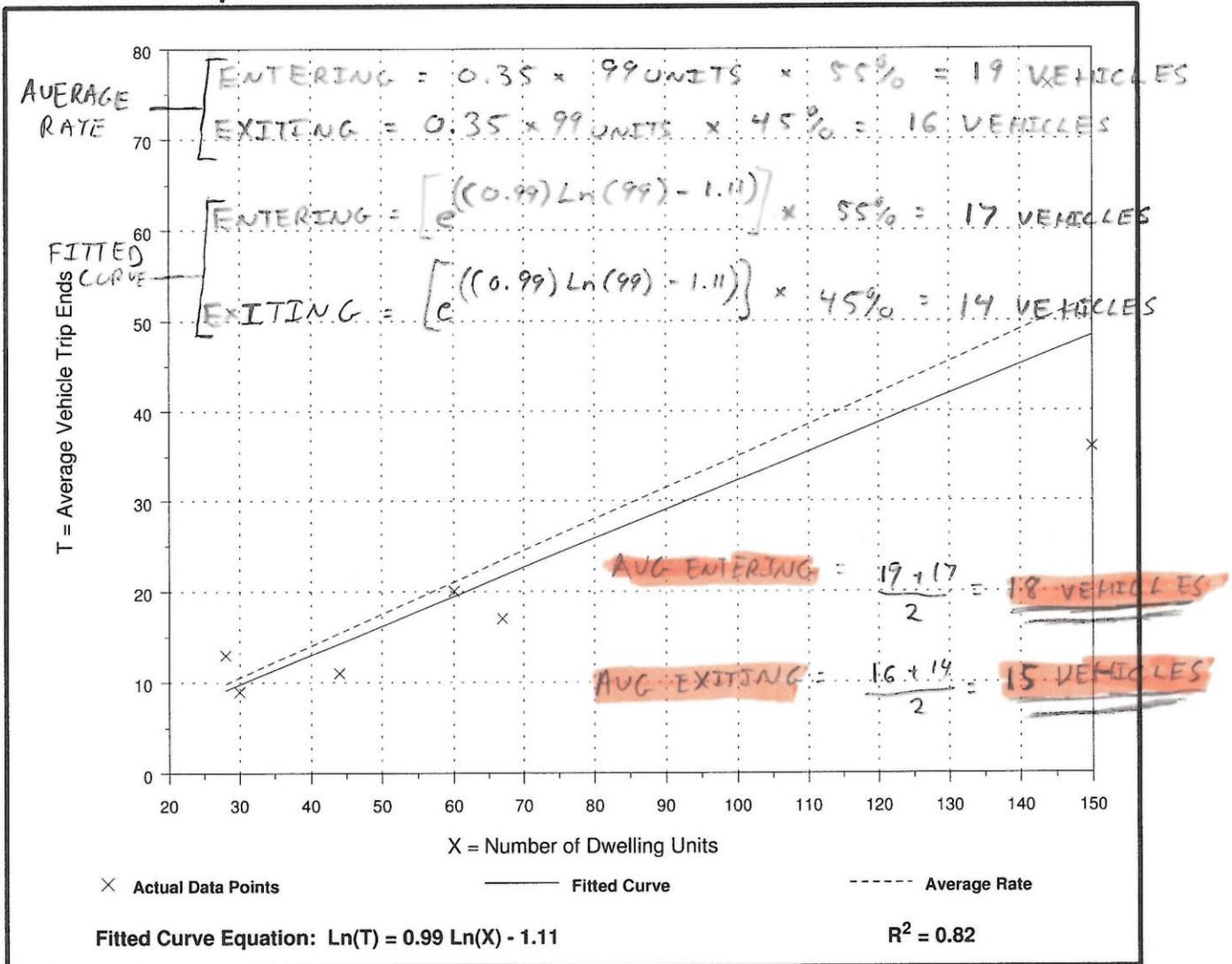
99 UNITS

Number of Studies: 7  
 Avg. Number of Dwelling Units: 75  
 Directional Distribution: 55% entering, 45% exiting

### Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.35	0.24 - 0.53	0.60

### Data Plot and Equation



# Senior Adult Housing - Attached (252)

3463  
ENFJELD

**Average Vehicle Trip Ends vs: Dwelling Units**  
On a: **Weekday,**  
**A.M. Peak Hour of Generator**

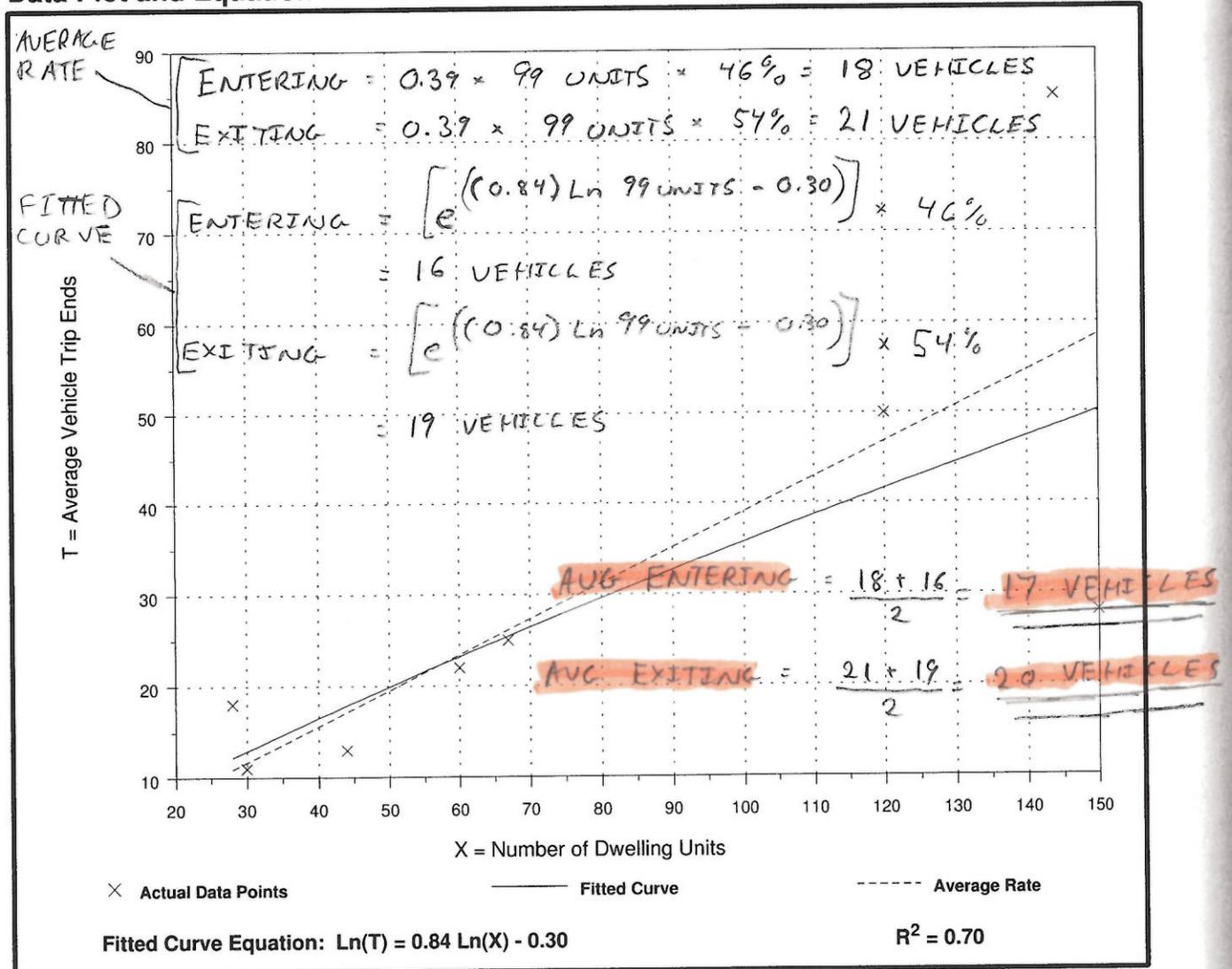
Number of Studies: 8  
Avg. Number of Dwelling Units: 80  
Directional Distribution: 46% entering, 54% exiting

*99 UNITS*

## Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.39	0.19 - 0.64	0.64

## Data Plot and Equation



**APPENDIX E**  
**Synchro**

**Existing A.M.**

2010 HCM Unsignalized Intersection Capacity Analysis  
Route 5 & Enfield Terrace

06/09/2017



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	3	386	0	2	555
Future Volume (Veh/h)	2	3	386	0	2	555
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.50	0.75	0.81	0.92	0.25	0.75
Hourly flow rate (vph)	4	4	477	0	8	740
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1233	477			477	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1233	477			477	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	99			99	
cM capacity (veh/h)	194	588			1085	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	8	477	748			
Volume Left	4	0	8			
Volume Right	4	0	0			
cSH	292	1700	1085			
Volume to Capacity	0.03	0.28	0.01			
Queue Length 95th (ft)	2	0	1			
Control Delay (s)	17.7	0.0	0.2			
Lane LOS	C		A			
Approach Delay (s)	17.7	0.0	0.2			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			0.2			
Intersection Capacity Utilization			40.8%	ICU Level of Service		A
Analysis Period (min)			15			

**Existing P.M.**

2010 HCM Unsignalized Intersection Capacity Analysis  
Route 5 & Enfield Terrace

06/09/2017



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	11	599	7	9	568
Future Volume (Veh/h)	3	11	599	7	9	568
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.88	0.88	0.89	0.89	0.94	0.94
Hourly flow rate (vph)	3	13	673	8	10	604
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1301	677			681	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1301	677			681	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	97			99	
cM capacity (veh/h)	176	453			912	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	16	681	614			
Volume Left	3	0	10			
Volume Right	13	8	0			
cSH	349	1700	912			
Volume to Capacity	0.05	0.40	0.01			
Queue Length 95th (ft)	4	0	1			
Control Delay (s)	15.8	0.0	0.3			
Lane LOS	C		A			
Approach Delay (s)	15.8	0.0	0.3			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			0.3			
Intersection Capacity Utilization		47.1%		ICU Level of Service		A
Analysis Period (min)		15				

## **Background A.M.**

# HCM Unsignalized Intersection Capacity Analysis

## 1: Route 5 /Route 5 & Enfield Terrace Ext

11/09/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	3	402	0	2	578
Future Volume (Veh/h)	2	3	402	0	2	578
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.62	0.62	0.81	0.81	0.74	0.74
Hourly flow rate (vph)	3	5	496	0	3	781
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1283	496			496	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1283	496			496	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	99			100	
cM capacity (veh/h)	182	574			1068	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	8	496	784
Volume Left	3	0	3
Volume Right	5	0	0
cSH	317	1700	1068
Volume to Capacity	0.03	0.29	0.00
Queue Length 95th (ft)	2	0	0
Control Delay (s)	16.6	0.0	0.1
Lane LOS	C		A
Approach Delay (s)	16.6	0.0	0.1
Approach LOS	C		

Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization		42.0%	ICU Level of Service
Analysis Period (min)		15	A
Description: Route 5 & Enfield Terrace			

**Background P.M.**

HCM Unsignalized Intersection Capacity Analysis  
 1: Route 5 /Route 5 & Enfield Terrace Ext

11/09/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	11	623	7	9	591
Future Volume (Veh/h)	3	11	623	7	9	591
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.89	0.92	0.92	0.94
Hourly flow rate (vph)	3	12	700	8	10	629
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1353	704			708	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1353	704			708	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	97			99	
cM capacity (veh/h)	163	437			891	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	15	708	639			
Volume Left	3	0	10			
Volume Right	12	8	0			
cSH	327	1700	891			
Volume to Capacity	0.05	0.42	0.01			
Queue Length 95th (ft)	4	0	1			
Control Delay (s)	16.5	0.0	0.3			
Lane LOS	C		A			
Approach Delay (s)	16.5	0.0	0.3			
Approach LOS	C					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			48.3%	ICU Level of Service	A	
Analysis Period (min)			15			

**Combined A.M.**

HCM Unsignalized Intersection Capacity Analysis  
 1: Route 5 /Route 5 & Enfield Terrace Ext

11/09/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	12	8	402	7	10	578
Future Volume (Veh/h)	12	8	402	7	10	578
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.62	0.62	0.81	0.81	0.74	0.74
Hourly flow rate (vph)	19	13	496	9	14	781
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1310	500			505	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1310	500			505	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	98			99	
cM capacity (veh/h)	173	570			1060	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	32	505	795			
Volume Left	19	0	14			
Volume Right	13	9	0			
cSH	242	1700	1060			
Volume to Capacity	0.13	0.30	0.01			
Queue Length 95th (ft)	11	0	1			
Control Delay (s)	22.2	0.0	0.4			
Lane LOS	C		A			
Approach Delay (s)	22.2	0.0	0.4			
Approach LOS	C					
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			48.4%	ICU Level of Service	A	
Analysis Period (min)			15			

**Combined P.M.**

HCM Unsignalized Intersection Capacity Analysis  
 1: Route 5 /Route 5 & Enfield Terrace Ext

11/09/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	7	8	623	9	9	591
Future Volume (Veh/h)	7	8	623	9	9	591
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.89	0.92	0.92	0.94
Hourly flow rate (vph)	8	9	700	10	10	629
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1354	705			710	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1354	705			710	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	98			99	
cM capacity (veh/h)	163	436			889	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	17	710	639			
Volume Left	8	0	10			
Volume Right	9	10	0			
cSH	244	1700	889			
Volume to Capacity	0.07	0.42	0.01			
Queue Length 95th (ft)	6	0	1			
Control Delay (s)	20.9	0.0	0.3			
Lane LOS	C		A			
Approach Delay (s)	20.9	0.0	0.3			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			0.4			
Intersection Capacity Utilization		48.3%		ICU Level of Service		A
Analysis Period (min)			15			

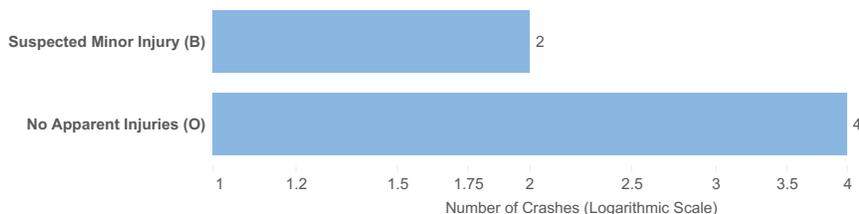
**APPENDIX F**  
**Accident History Report**

# Collision Analysis Safety Tables

Crash Severity	Top 10 Routes	Time and Date of Crashes	Crash Conditions	Roadway Features 1	Roadway Features 2	Contributing Factors
----------------	---------------	--------------------------	------------------	--------------------	--------------------	----------------------

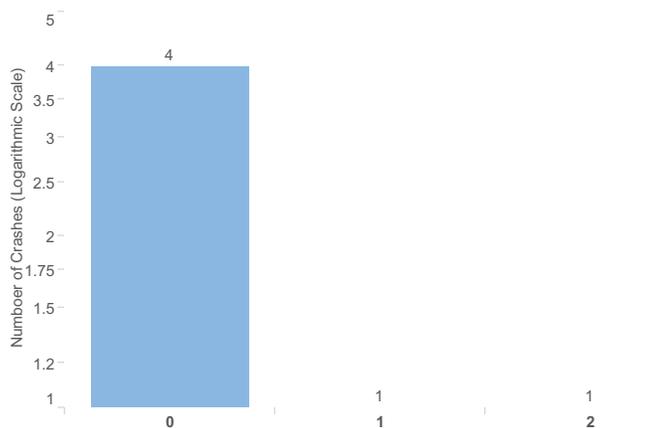
Queries Selected: Town: All, Date (Year: All or 1/1/2015 to 11/3/2018), Severity: All, Route Class: All, Road Number: 5, Local Road Name: DR TO ENFIELD HIGH SCHOOL, ENFIELD TER, ENFIELD TER(CDS) and 2 more, Mile Markers: 51 to 53

## Injury Status of Crashes



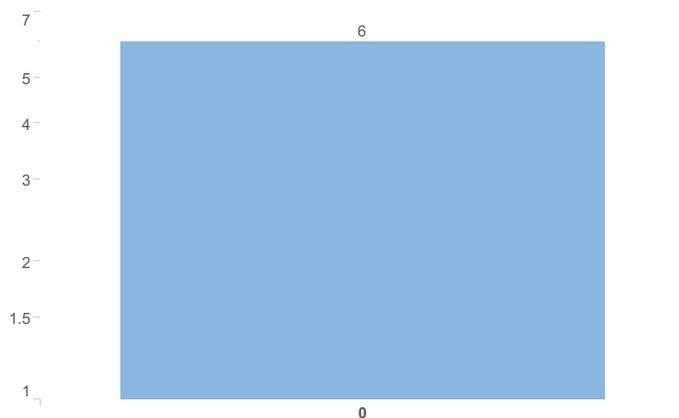
Crash Severity	Crashes	% of All Crashes
Suspected Minor Injury (B)	2.000	33.33%
No Apparent Injuries (O)	4.000	66.67%
<b>Grand Total</b>	<b>6.000</b>	<b>100.00%</b>

## Injuries per Crash



Injuries per Crash	Crashes	% of All Crashes
0	4.000	66.67%
1	1.000	16.67%
2	1.000	16.67%
<b>Grand Total</b>	<b>6.000</b>	<b>100.00%</b>

## Fatalities per Crash



Fatalities per Crash	Crashes	% of All Crashes
0	6.000	100.00%
<b>Grand Total</b>	<b>6.000</b>	<b>100.00%</b>

These data are exempt from discovery or admission under 23 U.S.C 409. Data was last updated on 11/6/2018.

# Collision Analysis Safety Tables

Crash Severity	Top 10 Routes	Time and Date of Crashes	Crash Conditions	Roadway Features 1	Roadway Features 2	Contributing Factors
----------------	---------------	--------------------------	------------------	--------------------	--------------------	----------------------

Queries Selected: Town: All, Date (Year: All or 1/1/2015 to 11/3/2018), Severity: All, Route Class: All, Road Number: 5, Local Road Name: DR TO ENFIELD HIGH SCHOOL, ENFIELD TER, ENFIELD TER(CDS) and 2 more, Mile Markers: 51 to 53

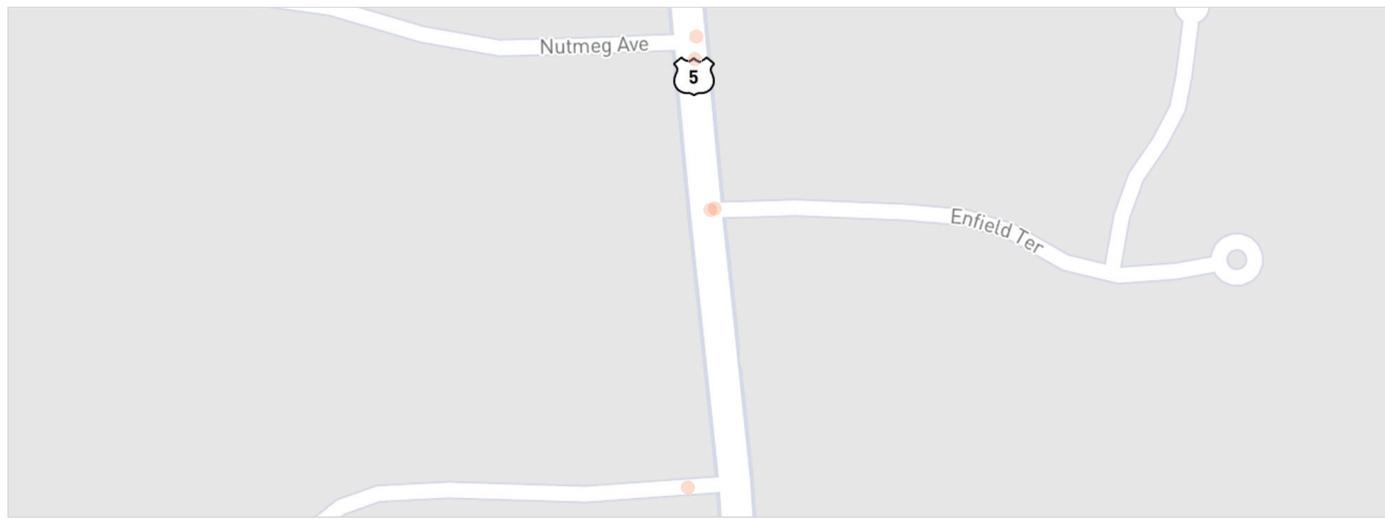
This page incorporates dynamic filtering on the tables and mile marker bar graph. **Top 10 Routes for Crashes**  
 By selecting a record, the other figures will be filtered by that selection. **Any selections made on this page will not be reflected anywhere else in the report.**

Please Note: The location and route number are both drawn directly from the crash reports and have not been checked for entirely errors. These may not directly correspond and are not guaranteed to be accurate.

5

6

## Crash Locations (limited to the 10,000 most recent crashes)



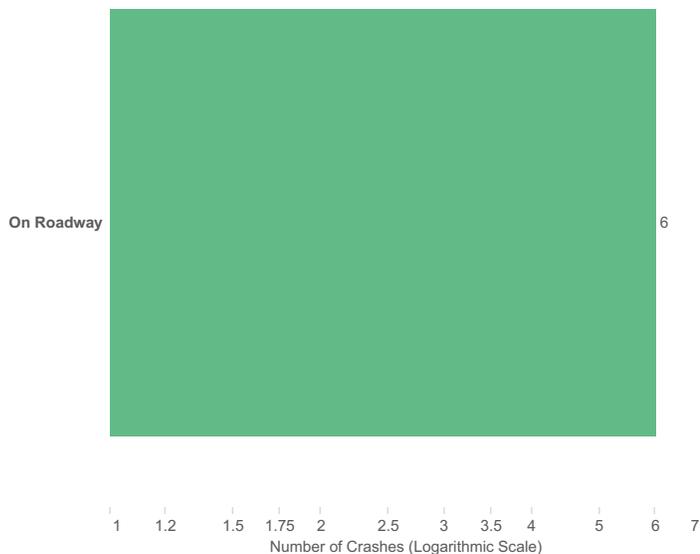
These data are exempt from discovery or admission under 23 U.S.C 409. Data was last updated on 11/6/2018.

# Collision Analysis Safety Tables

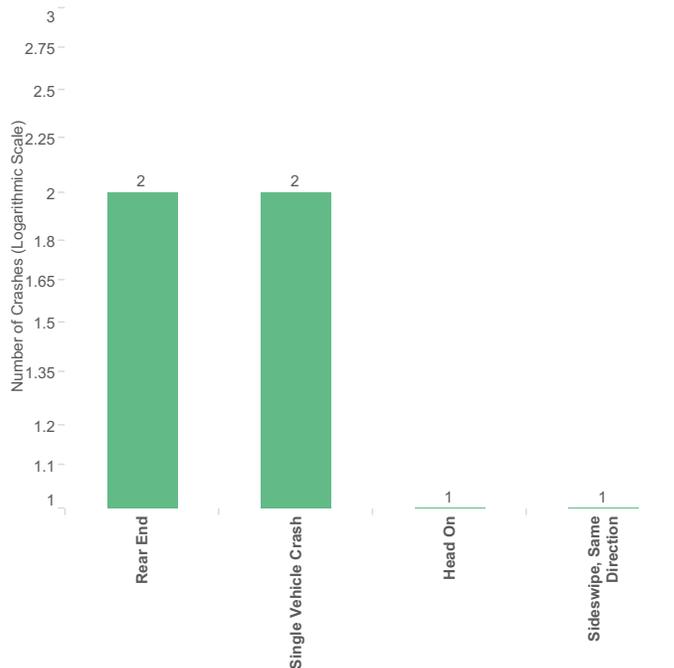
Roadway Features 2	Contributing Factors	Contributing Factors-Vehicle	Crash Manner and Location	First Harmful Event 1	First Harmful Event 2	Vehicle Crash Events
--------------------	----------------------	------------------------------	---------------------------	-----------------------	-----------------------	----------------------

Queries Selected: Town: All, Date (Year:All or 1/1/2015 to 11/3/2018), Severity: All, Route Class: All, Road Number: 5, Local Road Name: DR TO ENFIELD HIGH SCHOOL, ENFIELD TER, ENFIELD TER(CDS) and 2 more, Mile Markers: 51 to 53

## Location of 1st Harmful Event



## Manner of Crashes



Location Of First Harmful Event	Crashes	% of All Crashes
On Roadway	6.000	100.00%
<b>Grand Total</b>	<b>6.000</b>	<b>100.00%</b>

Manner Of Crash	Crashes	% of All Crashes
Rear End	2.000	33.33%
Head On	1.000	16.67%
Sideswipe, Same Direction	1.000	16.67%
Single Vehicle Crash	2.000	33.33%
<b>Grand Total</b>	<b>6.000</b>	<b>100.00%</b>

These data are exempt from discovery or admission under 23 U.S.C 409. Data was last updated on 11/6/2018.